

REMARKS

Reconsideration and allowance of the above-identified application are respectfully requested. Claims 1-15 remain pending, wherein it is proposed to amend claims 1 and 14 without the introduction of new matter. Entry of the amendments to claims 1 and 14 after a final rejection is appropriate because these amendments correct typographical errors, and hence, do not raise new issues which would require further search and/or consideration.

Claims 1 and 14 are rejected under 35 U.S.C. §102(e) as allegedly being anticipated by U.S. Patent No. 6,097,138 to Nakamoto patent ("Nakamoto"). Claims 2 and 15 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Nakamoto in view of U.S. Patent No. 5,892,321 to Itoh et al. ("Itoh"). These rejections are respectfully traversed.

Nakamoto does not anticipate Applicants' claim 1 because Nakamoto does not disclose all of the elements of Applicants' claim 1. For example, Nakamoto does not disclose "micro-tips having nano-sized surface features, each micro-tip being of homogenous material, formed in electrical contact with the cathode" as recited in Applicants' claim 1.

Nakamoto discloses a plurality of embodiments of a field emission cold-cathode device. The Office Action relies upon the embodiment illustrated in figure 16 of Nakamoto as allegedly anticipating Applicants' claim 1. Specifically, the Office Action asserts that conductive projection 118 of Nakamoto corresponds to the micro-tips of Applicants' claim 1, and that the carbon nanotubes 122 of Nakamoto correspond to the nano-sized surface features of Applicants' claim 1. Nakamoto discloses that the conductive projection 118 is "made of a conductive material such as Mo, Ta, W, Cr, Si, Ni, LaB₆, AlN, GaN, graphite, or diamond." (Nakamoto at col. 13, lines 35-38). The carbon nanotubes can be either hollow nanotubes or can include a conductive filling layer selected from the group listed above in connection with

the conductive projection 118. Accordingly, Nakamoto discloses that the conductive projections are made of a material that is not the same as the material of the carbon nanotubes, and include carbon nanotubes. Therefore, Nakamoto does not disclose that the conductive projections are made of a homogenous material, and hence, cannot disclose "micro-tips having nano-sized surface features, each micro-tip being of homogenous material, formed in electrical contact with the cathode" as recited in Applicants' claim 1.

Nevertheless, the Office Action cites column 5, line 14 of Nakamoto as allegedly disclosing that each micro-tip is of a homogenous material. Column 5, lines 13-17 describe that the carbon nanotube 16 (of an earlier embodiment) is formed by winding a graphite sheet into a cylindrical shape. However, the Office Action is asserting that the conductive projections 118 comprising the carbon nanotubes correspond to the micro-tips of Applicants' claim 1, and accordingly, the composition of the nanotubes themselves is not indicative of the composition of the material of the conductive projections 118. Regardless, it is clear from the disclosure of Nakamoto that the conductive projections include carbon nanotubes, and hence, the conductive projections are not "of homogenous material" as recited in Applicants' claim 1.

Since Nakamoto does not disclose all of the elements of Applicants' claim 1, Nakamoto cannot anticipate Applicants' claim 1.

Nakamoto does not anticipate Applicants' claim 14 because Nakamoto does not disclose all of the elements of Applicants' claim 14. Specifically, Nakamoto does not disclose "micro-tips having nano-sized surface features" as recited in Applicants' claim 14.

As discussed in Applicants' Amendment filed on August 7, 2003, claim 14 is essentially a product-by-process claim. Recognizing this, the Office Action cites M.P.E.P. §

2113 for the assertion that "absent of showing an unobvious difference between the claimed product and the prior art, the subject product-by-process claim limitation is not afforded patentable weight." It appears that the rejection of Applicants' claim 14 is based on an improper interpretation of the applicable law.

As correctly noted in the Office Action, M.P.E.P. § 2113 provides an outline of how to examine product-by-process claims. However, there is nothing in this section which states that a rejection can ignore language in rejecting a claim. Instead, M.P.E.P. § 2113, citing *In re Garnero*, 412 F.2d 276, 279, 162 USPQ 121, 123 (CCPA 1979), states that "[t]he structure implied by the process steps should be considered when assessing the patentability of product-by-process claims over the prior art, especially where the product can only be defined by the process steps by which the product is made, or where the manufacturing process steps would be expected to impart distinctive structural characteristics to the final product." (Emphasis Added). Since the Office Action is not "affording patentable weight," the Office Action has not considered the "structure implied by the process steps...when assessing the patentability" of Applicants' claim 14, and hence, the rejection of Applicants' claim 14 is based on an improper application of U.S. Patent law.

As discussed in the present application, at page 5, lines 7-25, the result of the process steps is that the micro-tip is "a collection of nano-tips [having] nano-sized features." Accordingly, it is respectfully submitted that it is this structure which the process steps recited in claim 14 imply. It is respectfully submitted that Nakamoto does not disclose the structure implied by the process steps of the product-by-process recited in Applicants' claim 14. Therefore, it is respectfully submitted that Nakamoto does not anticipate Applicants' claim 14.

Claims 2 and 15 respectively depend from claims 1 and 14. It is respectfully submitted that Itoh does not address the above-identified deficiencies of Itoh with respect to Applicants' claim 1 and 14. Accordingly, claims 2 and 15 are patentably distinguishable over the combination of Nakamoto and Itoh for at least those reasons stated above with regard to Applicants' claims 1 and 14.


For at least those reasons stated above, it is respectfully requested that the rejections of claims 1, 2, 14 and 15 be withdrawn.

All outstanding objections and rejection having been addressed, it is respectfully submitted that the present application is in condition for allowance. Notice to this effect is earnestly solicited. If there are any questions regarding this response or the application in general, the Examiner is encouraged to contact the undersigned at 703-838-6578.

Respectfully submitted,

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